HELMINTHOLOGICAL ABSTRACTS

Supplement to the
JOURNAL OF HELMINTHOLOGY

Edited by
R. T. LEIPER, F.R.S., and B. G. PETERS, Ph.D.
with the collaboration, as abstractors, of
M. J. TRIFFITT, D.Sc., J. N. OLDHAM, Ph.D.,
P. A. CLAPHAM, B.Sc., D. O. MORGAN, Ph.D.,
and S. GLADSTONE SOLOMON, Ph.D.
in co-operation with
T. W. M. CAMERON, D.Sc., M.R.C.V.S. (Canada)
and
H. O. MÖNNIG, Ph.D., B.V.Sc. (S. Africa).

VOL. I.
A Résumé of the Periodical Literature of 1932,
issued by arrangement with the
Imperial Bureau of Agricultural Parasitology.

INSTITUTE OF AGRICULTURAL PARASITOLOGY
Winches Farm Drive
Hatfield Road
St. Albans · Eng.

HELMINTHOLOGICAL ABSTRACTS

Vol. I, No. 1.

1—American Journal of Hygiene.

a. STUMBERG, J. E.—"Cutaneous retention of infective larvæ of the dog hookworm, *Ancylostoma caninum*, and the inflammatory reaction to skin penetration." XV (1), 186-205, 6 tables, 2 pl., 18 refs. [January, 1932.]

b. LAMSON, P. D., CALDWELL, E. L., BROWNE, H. W. & WARD C. B.—"A comparison of the anthelmintic properties of hexylresorcinol and heptylresorcinol." XV (1), 306-314, 4 tables, 13 refs. [January, 1932.]

(a) Stumberg attempted to produce a local immunity, as shown by the retention of *Ancylostoma caninum* larvæ in the skin and by histological reactions, but his experiments were not demonstrably effective.

The three methods used were: Repeated infection of the same area in normal (dogs) and abnormal (mice) hosts, subcutaneous injection of antigen, and subcutaneous injection of anti-hookworm rabbit sera, the two latter in dogs only. Variations inherent in the method were so large as to mask the actual results, though active local immunization with antigen suggested a definitely increased retention of larvæ in the skin, estimated by extracting the larvæ from chopped skin by the Baermann technique. Histologically, repeated infection produced a graded increased fibrocyte proliferation in the dermis, but generally there was no correlation between degree of reaction and experimental treatment. Round-cell infiltration in no case occurred. The fate of intradermally injected dead larvæ was not affected by attempted immunization. The histological findings are consonant rather with mechanical injury by the larvæ than with immunity reactions. B.G.P.

(b) Heptylresorcinol is shown by Lamson and his co-workers to be slightly less effective than hexylresorcinol against intestinal worms in man.

It is less absorbed from the intestine (4 per cent. or less, as against 20-30 per cent.) but is far less soluble in water. Both substances dissolve readily in fats and vegetable oils (in which they lose their anthelmintic action), react with gelatin and precipitate protein. Heptylresorcinol in 1 gm. doses was found 100 per cent. effective in removing ascaris and hookworm from dogs, and in man the same dose produced the following percentage reductions of eggs in the stool (averages of 17 cases each): hookworm 55.2 per cent. (compared with hexylresorcinol, 25 cases, 62.7 per cent.); ascaris 73.5 per cent.; trichuris 35.8 per cent. Both drugs are markedly non-toxic to man and may be tested with safety.

B.G.P.

2—Annals and Magazine of Natural History.

a. BAYLIS, H. A.—"A new species of the nematode genus *Trichuris* from Queensland." (Ser. 10), IX (49), 31-32, 1 fig., 1 ref. [January, 1932.]

b. BAYLIS, H. A. & KING, L. A. L.—"A new nematode parasite of the common shrew." (Ser. 10), IX (49), 58-64, 7 figs., 3 refs. [January, 1932.]

c. BAYLIS, H. A.—"A new nematode parasite from a hyrax." (Ser. 10), IX (49), 120-123, 4 figs., 2 refs. [January, 1932.]

d. BAYLIS, H. A.—"What is *Psilochasmus lecithosus*, Otte?" (Ser. 10), IX (49), 124-125, 1 ref. [January, 1932.]

e. WALTON, A. C.—"A redescription of *Leptodera elongata*, Baird, 1858 [Nematoda]." (Ser. 10), IX (50), 146-150, 3 figs., 7 refs. [February, 1932.]

f. WALTON, A. C.—"A new nematode (*Camallanus multiruga*, sp. n.) parasitic in a West African frog." (Ser. 10), IX (50), 151-154, 2 figs., 5 refs. [Feb., 1932.]

g. BAYLIS, H. A.—"A new nematode of the genus *Cucullanus* from New Zealand." (Ser. 10), IX (50), 174-177, 1 fig., 4 refs. [February, 1932.]

(a) Baylis gives a short specific description of *Trichuris perameles*; a new species of whipworm from the Bandicoot (*Perameles obesula*) North Queensland.

The new species is smaller than *T. minuta* (Rud. 1819), the only form hitherto recorded from marsupials and found in American opossums. The male is 12 to 14.2 mm., the female 11 to 19.5 mm. The spicule is about 2 mm. long and the spiny spicular sheath when fully extruded has a large smooth membranous distal expansion. R.T.L.

(b) Baylis and King describe from the common shrew (*Sorex araneus*) a second species of the curious nematode genus *Soboliphyme*.

S. soricis is considerably larger than *S. baturini* found by Petrow (1930) in the sable, fox and cat. The genus *Soboliphyme* with *Eustrongylides* and *Dioctophyme* and *Hystrichis* falls, in the authors' view, into an emended family *Dioctophymoidæ* (Railliet, 1916) and does not require the separate family *Soboliphymidæ* erected for it by Petrow. The new species measures in the male 25 mm. in length, in the female 40 to 46 mm. The oral sucker is extremely muscular. The caudal end of the male is expanded into a sucker-like bursa. The single spicule is 1.95 to 2.4 mm. in length. The eggs are oval provided with two thin shells and each has an operculum. The vulva is close behind the posterior end of the œsophagus. The short vagina leads to a very wide single uterus and ovary. R.T.L.

(c) Baylis adds to the genus *Setaria*, reviewed by Thwaite in 1927, a new species *S. hyracis* obtained from the abdominal cavity of a tree-hyrax *Dendrohyrax* sp. in the Belgian Congo.

It is closely related to *Setaria loveridgei* Sandground, 1928 also in a hyrax but is smaller, the number and arrangement of the male caudal papillæ differ and the spicules measure 0.62 mm. and 0.21 mm. instead of 110μ and 50μ. R.T.L.

(d) Baylis, having examined some of the original specimens of *Psilochasmus lecithosus* described by Otte from the domestic duck in Latvia, has reached the conclusion that they are slightly macerated specimens of the echinostome *Hypoderæum conoideum* (Bloch, 1782).

The original description is erroneous in stating that there are no spines on the body or around the head. A second consignment in a better state of preservation confirmed the earlier opinion. R.T.L.

(e) Walton has discovered from an examination of the type material of *Leptodera elongata* Baird, 1858 that it really belongs to the genus *Spironoura* Leidy, 1856 instead of to the genus *Leptodera* Dujardin, 1845 and has given a new description of the species, which was found in Mexico in *Amblystoma tigrinum*.

There are six known species of *Spironoura* in Amphibian hosts viz., *S. gracile*, *S. catesbianæ*, *S. cryptobranchi*, *S. mascula*, *S. nitida*, and *S. elongata*. The chief differential characters are tabulated. The poorly described and now unrecognisable type species *S. gracile* Leidy, 1856 is named *S. elongata* Baird, 1858. The known Amphibian parasites are confined to the western hemisphere but those reported from reptiles and fresh-water fishes are more cosmopolitan. R.T.L.

(f) Walton states that the family Camallanidæ is represented in Amphibia by three genera, viz., *Camallanus*, *Camallanides* and *Procamallanus*.

A new species is described for the genus *Camallanus* under the name *C. multiruga*. It occurred in " a frog " collected on the Gold Coast and differs from *C. baylisi* especially in the number and arrangement of the valvular ridges, in the absence of teeth, the caudal papillæ and the trifid female tail ; from *C. nigrescens* in the structure of the buccal capsule, the decidedly shorter spicules and the different body proportions. R.T.L.

(g) Baylis has found a new *Cucullanus* in a collection of parasites from fishes in the brackish Lake Ellesmere, New Zealand. He gives a short description of *C. antipodeus* from the intestine of *Rhombosolea* sp. He also records *Hedruris spinigera* (Baylis 1931) from three new hosts in New Zealand.

C. antipodeus approaches very closely to *C. heterochrous* Rud. 1802 and may be merely a local variety. The female tail is longer and the male spicules are much shorter while the small lateral papillæ of the tail are constantly in a different position. Baylis mentions also that the specimens identified by him in 1928 as *C. cirratus* Müller from *Pleuronectes platessa* off the Welsh coast must have been *C. heterochrous*. R.T.L.

3—Aquarist.

a. CASTON, F. G. [Cawston, F. G.].—" Environmental Influences and Pond-Snails." IV (12), 207. [February, 1932.]

(a) The presence in abundance of the favourite food-supply of each species of mollusc is necessary if one is to avoid much fruitless search for Bilharzia carriers. In South Africa *Planorbis pfeifferi* is found in water-lily ponds and *Physopsis africana* especially favours the decomposing smooth leaves of the blue lotus, *Nymphæa stellata* and the broad rush, *Cyperus immensus*.

Although domesticated ducks keep pools relatively free from snails they abound wherever wild ducks are to be found. Crabs feed greedily on snails but cannot keep them in control.

In an editorial addendum the Editor remarks that snails confined in small aquaria grow very slowly and never attain the species maximum although they live a normal span of years. This seems to be an adaptation to environment. R.T.L.

4—Archiv für Schiffs- und Tropen-hygiene.

a. KASTEIN, J.—" Beobachtungen von gehäuftem Auftreten von *Schistosomum japonicum*—Erkrankungen in Shanghai." XXXVI (1), 1-4, 1 chart. [January, 1932.]

b. UNRUH, V.v.—" Askariasis im subtropischen Mexiko." XXXVI (1), 4-9. [January, 1932.]

c. ERHARDT, A.—" Chemotherapeutische Untersuchungen an der Opisthorchiasis der Katzen. I." XXXVI (1), 22-31, 3 tables, 1 chart. [January, 1932.]

d. PEWSNER, M.—" Zur Charakteristik einer Trichinellen-Epidemie." XXXVI (2), 88-90. [February, 1932.]

(a) Kastein describes what was almost an epidemic of acute schistosomiasis japonica in Shanghai in the autumn of 1931.

The principal symptoms were well-marked fever (38° to 41°C.), high leucocyte counts (18,000 to 28,000), an eosinophilia between 42 and 72 per cent. and disagreeable heart sensations. Neither liver nor spleen was palpable but an urticaria developed in the course of the disease. Intramuscular Fuadin injections were given daily in graded doses up to 5 cc. which dose was then repeated every second day until the symptoms abated—a matter of two to three weeks. B.G.P.

(b) Unruh reveals a high incidence of *Ascaris lumbricoides* in Mexico, particularly among children, but finds Ascaridol an effective anthelmintic.

The difficulty is that children completely freed from roundworms are quickly reinfected. Cattle, fowls and swine (which eat human excrement)

contribute towards the mechanical distribution of eggs in the stool, and house flies are even more important. Thus 80 per cent. of children under 12 are infected and 50 per cent. of those between 12 and 20. Ascaridol in doses of 0.6 gm. (more or less according to age) in capsules is a safe, uniform and reliable remedy and in multiple infections can be combined with 2.4 gm. of Seretin (a carbon tetrachloride preparation). B.G.P.

(c) Erhardt has treated a chronic natural infection of *Opisthorchis* in cats with Fuadin, carbon tetrachloride, and gentian violet of which the first is completely effective.

The dose of Fuadin (Neoantimosan) was 0.4 cc. per Kgm., the lethal dose being between 0.5 cc. and 0.7 cc. per Kgm. in a single injection. It was 100 per cent. effective except in a cat of only 2.5 Kgm. body weight. Seretin (carbon tetrachloride) per os in doses of about 1 cc. per Kgm. was practically without effect. Gentian violet per os in doses of 0.66 gm. per Kgm. was over 50 per cent. effective. The author claims to have established a method for testing, in cats, trivalent antimony compounds which are important as anthelmintics in human helminthiases. B.G.P.

(d) A slight and abnormal epidemic of Trichiniasis in the U.S.S.R. allowed the author to make observations on the symptoms displayed by the human hosts during the development of the parasite.

These observations, however, owing to the difficulties of recognition of symptoms in such a mild outbreak, were not easy to make. During the first period, for example, while the parasites were in the stomach and intestine, illness was entirely absent, while muscle symptoms were recorded only in isolated cases. The incubation period lasted on the average 2-3 weeks and mortality was negligible, 2 persons out of 150 dying. The studies have proceeded from 1925 and owing to the fact that in the region under discussion, Homel and its environs, the Trichinella infection of swine was 1/2 per cent. up to the outbreak of the Great War and the Revolution, whereas during the last 15 years it has increased to 3-4 per cent., the author sees in this increase definite grounds for the pursuit of studies in human Trichiniasis. J.N.O.

5—Biological Bulletin.

a. JAHN, T. L. & KUHN, L. R.—"The life history of *Epibdella melleni* MacCallum 1927, a monogenetic trematode parasitic on marine fishes." LXII (1), 89-111, 2 text-figs., 2 plates, 8 refs. [February, 1932.]

(a) Jahn and Kuhn have re-described the adult and traced in detail the life history of a monogenetic trematode, *Epibdella melleni*, of the suborder Monopisthocotylinea parasitic externally on marine teleostome fishes of the order Acanthopteri. The life history, which is direct, is the first to be recorded for this suborder of Monogenea.

Larvæ were obtained by scraping the flukes from infested fishes into dishes and removing the eggs that were laid. The description of the

adult differs from that by MacCallum (1927) principally in details of the reproductive system. Thus the testes are not smooth but lobed. There is a large cirrus sac containing a seminal vesicle and a prostatic reservoir. The seminal receptacle is peculiar in lying within the ovary. Eggs hatch in 5-8 days and the larva has to find its host within about 6 hours, since after this period it loses its cilia. The larva has two pairs of eyes, two anterior excretory vesicles and pores, 10 pairs of flame-cells, and 14 hooks around the posterior sucker: these hooks persist in the adult. The parasite has been found on upwards of 40 species of Acanthopteri but on no other teleostomes and on no elasmobranchs, although many of these have been exposed to infection. The flukes, probably in company with secondary bacterial invaders, may destroy the cornea and even the entire eye, and cause extensive desquamation over the body, often resulting in the death of the fish. B.G.P.

6—Bollettino della Sezione Italiana della Società Internazionale di Microbiologia.

a. CASSATA, C.—" Une nouvelle méthode facile et économique pour la conservation des préparés de microscopie et de parasitologie." IV (1), 11-12. [January, 1932.]

(a) Cassata has devised a cheap and simple mounting method for parasitological preparations, in which the medium consists of amyl acetate 35 gm., methyl alcohol 25 gm., and dry celloidin 50 gm.

For helminths the procedure is to stretch the parasite on a coverslip, dry on a water-bath and cover with a few drops of the medium; set aside for an hour, under cover to protect from dust. Fæcal preparations should be left on the water-bath only until still slightly moist, as too much desiccation results in bad preparations. This celloidin method has been employed in mounting oxyurids, *Ancylostoma duodenale*, tapeworms, liver fluke and ova in fæces as well as in the preparation of mounts of bacteria and foods such as coffee, pepper, etc. J.N.O.

7—Bulletins de la Société de Pathologie Exotique.

a. PIROT, R.—" Le parasitisme intestinal dans la région de Toulon." XXV (1), 78-85. [January, 1932.]

b. BRUMPT, E.—" Présentation de préparations microscopiques. A. Hépatisation pulmonaire double d'origine vermineuse chez une souris. B. Coupe d'intestin grêle d'une jeune souris." XXV (2), 98-100. [February, 1932.]

c. TOULLEC, F. & RIOU, M.—" Le tubage duodénal dans les distomatoses hépatiques à *Clonorchis sinensis*—Essais thérapeutiques." XXV (2), 147-149. [February, 1932.]

d. KHALIL, M. & HASSAN, A.—" The serum globulin in human schistosomiasis." XXV (2), 149-167, 14 refs. (Resumé in French.) [February, 1932.]

e. GALLIARD, H.—" Recherches sur les filarioses au Gabon Occidental." XXV (2), 167-174, 13 refs. [February, 1932.]

(a) Pirot has found that the incidence of helminthic (and protozoal) intestinal infections in man, as revealed by fæcal examinations, is very low in the Toulon region: a condition which he ascribes to local geographical conditions.

On a basis of 500 subjects, the incidence of trichocephalus cases was 13.6 per cent., ascaris 2.8 per cent. and other helminths negligible. Toulon enjoys the warm dry Provençal climate with rare, irregular but violent rains. The chalky subsoil permits of little standing or running water, and all the local conditions are adverse to the development of eggs. Thus there is a low, stable level of incidence and intensity of helminthiasis, and the high incidence amongst soldiers and sailors who return to this important naval and military base from tropical lands quickly falls to the average level for the town. B.G.P.

(b) Brumpt's first exhibit was a preparation of the lung of a mouse which had been immersed in a culture of infectious larvæ of *Strongyloides ratti*. Four days after infection the mouse displayed dyspnœa and was killed. An autopsy revealed intense hepatisation of the lungs which were full of larvæ, while the duodenum contained relatively few. Normally the lungs are traversed by the larvæ of *Strongyloides* in a few hours. His second exhibit was a preparation of the small intestine of a mouse which had been similarly infected with *Strongyloides ratti*, but which was also carrying a natural infection of *Hymenolepis nana* var. *fraterna*. Cysticercoids of the latter were plentiful but only in the first two thirds of the small intestine: adults were mainly in the middle third. B.G.P.

(c) Toullec and Riou show that cases of *Clonorchis sinensis*, diagnosed by an examination of bile taken by means of the duodenal sound, were treated unsuccessfully with various anthelmintics.

The anthelmintics were Filicine mixed with calomel, benzol, tartar emetic, oil of chenopodium, thymol, and tetra-iodo-phenolphthalein. Professor Henry suggested to the authors that many anthelmintics, effective against *Fasciola hepatica* which feeds on blood, were useless against *Dicrocoelium dendriticum* which has a much simpler digestive system and feeds on mucus or bile. If *Clonorchis sinensis* has similar feeding habits, the therapeutic difficulties of such infections are explained. B.G.P.

(d) Khalil and Hassan have investigated the serum proteins from the standpoint of establishing a clinical test for human schistosomiasis.

In cases of kala-azar, dilution of the serum with distilled water produces a precipitate, possibly of globulins, as was found by Brahmachari ("globulin test"), while addition of formalin yields a more or less opaque gel, as was found by Spakman ("Aldehyde reaction"). These reactions, which appear to depend upon a high globulin content, are not specific for kala-azar, however, since Lal demonstrated them in cases of schistosomiasis.

The authors applied these tests to, and estimated the serum proteins in, 160 sera from patients harbouring *Schistosoma mansoni* or *S. hæmatobium* and from controls.
The aldehyde test is positive for few cases of schistosomiasis, mostly those with splenomegaly, and cannot be relied upon. In splenomegaly cases the globulin content, globulin/albumin ratio, and euglobulin content of the sera are all increased, even when schistosomiasis is not present. Globulin tests are therefore unreliable for schistosomiasis and not specific for visceral Leishmaniasis. B.G.P.

(c) Galliard presents an ecological survey of *Loa loa*, *Filaria perstans* and *Onchocerca volvulus* in the western parts of the Gabun: *Filaria bancrofti* is not present.
Statistics for the incidence of *Microfilaria loa* and *M. perstans* are classified according to certain well-marked geographical zones: Mountainous forest zone, coastal forest zone, savanna, and river valley. Thus loa is commonest in the mountain forests and river valley: perstans in the savannas and coastal forests. Children from 5 to 12 years old are more infested with perstans than are adults. Elephantiasis and onchocerca tumours are rare. B.G.P.

8—Canadian Journal of Research.

a. NICHOLSON, D.—" The Triænophorus parasite in the flesh of the Tullibee (Leucichthys)." VI (2), 162-165, 1 map, 1 pl., 2 refs. [February, 1932.]
b. NICHOLSON, D.—" Diphyllobothrium infection in *Esox lucius*." VI (2), 166-170, 1 table, 1 map, 3 refs. [February, 1932.]

(a) Yellow cysts containing the plerocercoid larva of Triænophorus are common in the muscles of many tullibee and some white fish in Lake Winnipeg and Lake Kississing and to a less extent in Lake Athopapuskow in Canada. The adult stages infest the pike *Esox lucius*.
The pike is of little marketable value and is also an intermediary of *Diphyllobothrium latum*. It is recommended that a bounty for pike caught up-creek at spawning time should be considered or that an industry could utilize them for fish meal as fertilizer. The first host is unknown but as the tullibee live on plankton Dr. Bajkov has suggested that *Limnocalanus macrurus*, *Epischura lacustris*, *Diaptomus scilis* or *Mysis relicta* are among the most likely crustacean intermediaries. R.T.L.

(b) There is a marked seasonal incidence of the plerocercoid larvæ of *Diphyllobothrium latum* in pike in Canada.
During the summer months the larvæ found are numerous, large and active. Those found in March to May are sluggish and small and many are degenerated. Sixty per cent. of those collected from summer-caught fish develop in dogs into adult tapeworms while only 27 per cent. of mobile larvæ from winter-caught fish undergo any development. The scarcity

of larvæ in very large fish suggests that the larvæ die off and become absorbed and that the older fish are not easily infected. Numerous parasites occur chiefly in small to medium sized pike. This accords with the experience of Indians and fishermen around Lake Winnipeg who say that winter caught pike are not harmful to their dogs. In the latter part of the summer, dogs around the Lake frequently show strobila protruding from the anus, but Dr. Bajkov has noted that in a lagoon near Gimli where the water is shallow and warmer than in the main lake the degree of infection of the pike remains relatively high during the winter. Cold storage at – 11° C. for 24 hours killed the larvæ in summer-caught fish but not when the minimum only reached – 3° C. It is recommended that summer fishing for pike which are to be marketed should be prohibited. Dogs should not be fed on raw summer fish and should be dosed periodically with male fern. R.T.L.

9—Comptes Rendus des Séances de l'Académie des Sciences.

a. PUSSARD, R.—"Sur un Nématode parasite de Psyllides." CXCIV (5), 493-494. [1st February, 1932.]

(a) Pussard records a mermithid nematode parasitizing several species of *Psylla* (*Homoptera ; Hemiptera*) in the Jura mountains.

He found that when the insects were placed in tubes, with leaves of their host plants (Alnus and Viburnum), transpiration produced a slight condensation on the tube, and that from insects in contact with this film of moisture the mermithids escaped. While the insects (*Psylla alni*, *P. Föresteri*, *P. viburni*) suffered no external modification as a result of parasitization, the ovaries were destroyed : not, however, the spermatheca. The nematodes (but not their insect hosts) were curiously limited to regions with calcareous soils. B.G.P.

10—Comptes Rendus des Séances de la Société de Biologie.

a. BORREL, A. & LARROUSSE, F.—"Forme anormale du *Cysticercus fasciolaris* et adénome hépatique chez le rat." CIX (3), 225-227, 2 figs. [29th January, 1932.]

b. JOYEUX, C., BAER, J. G. & TIMON-DAVID, J.—"Le développement du Trématode *Brachylæmus* (*Brachylæmus*) *nicolli* (Witenberg)." CIX (6), 464-466. [19th February, 1932.]

c. LARROUSSE, F.—"Parasites vermineux, cristaux fuchsinophiles acido-résistants et réactions hyperplasiques." CIX (8), 666-668, 2 figs. [4th March, 1932.]

(a) Borrel and Larrouse describe a cysticercus of *Tænia crassicollis*, in the liver of a rat, which was apparently responsible for two abnormal types of tumour.

Cysticercus fasciolaris usually produces inflamatory reactions in the interlobular connective tissue, resulting in the formation of a cyst membrane laid down by the host : within this membrane malignant sarcomata,

polymorphous or fusiform, may develop. In this case, however, was found on the liver surface a cyst containing no trace of the parasite and resembling a dendritic adenoma; and a short distance away was the parasite surrounded not by a cyst but by a diffuse, fibrous, adenomatous layer without definite boundaries and displaying infiltration of lymphocytes and plasmocytes. This adenoma may have been malignant. The two adenomata described are new to the histopathology of *C. fasciolaris* infections and the authors suggest that the parasite first settled at the site of the cyst, probably in a biliary canal, and then moved away and provoked the formation of the diffuse adenoma. B.G.P.

(b) Joyeux, Baer and Timon-David have traced the development of *Brachylœmus nicolli* (this genus is the old *Harmostomum*) from early stages in small terrestrial molluscs to adults in the common sparrow.

The early stages, which were found in *Helicella scitula*, *Oxyphilus cellarius* and *Agriolimax agrestis*, resemble those described by Hofmann (1899) for *Brachylœmus helicis* which is adult in the hedgehog. The cercariæ lose their tails and become encysted metacercariæ while still within the body of the molluscs; but whereas Hofmann found upwards of 100 metacercariæ in each mollusc the authors have never found more than 12, though young cercariæ were very abundant. Of several mammals and birds that were experimentally infected the sparrow (*Passer domestica*) was the only host in which the flukes grew to maturity. *B. nicolli* is indistinguishable morphologically from *B. fuscatum*. B.G.P.

(c) Larrousse has noted the presence of insoluble acid-resistant crystals, comparable with Russell's fuchsinophile bodies and Charcot-Leyden crystals, in the tissues of a cholesteatoma surrounding degenerate eggs of *Hymenolepis microstoma* in the liver of a mouse.

These crystals, clearly visible with the Ziehl-Neelsen stain, are probably a complex of lipoids and verminous toxins, and appear capable of inducing catalytically the formation of fibrous tissue and benign and even malignant neoplasms. They were associated in this case with crystals of cholesterol or its ethers. The author has also reproduced them experimentally by pounding fragments of the tapeworm in an ether solution of cholesterol and, after evaporation, inoculating the material under the skin of a mouse. After 8 days a nodule appeared, resembling the former steatoma and revealing in section the two crystals exactly as before. They have not yet been produced *in vitro*, but the author has recently found them in the liquid in a cyst of a degenerating *Cysticercus fasciolaris* and in the protoplasm of neighbouring liver tissue. B.G.P.

11—Gardeners' Chronicle.

a. MILLARD, W. A., BURR, S. & JOHNSON, L. R.—"Potato Sickness." XCI (2350), 28-29, 3 figs. [9th January, 1932.]

b. JOHNSON, G. C.—"Potato Sickness." XCI (2353), 88. [30th January, 1932.]

c. ROBERTS, J. G.—"Potato Sickness." XCI (2355), 129-130. [13th February, 1932.]

(a) The authors are of opinion that the eelworm *Heterodera schachtii* is the primary cause of " potato sickness," but that the fungi *Colletotrichum atramentarium* and *Corticium solani*, more especially the latter, may also play some part in the production of disease symptoms.

Series of pot experiments are described in which potatoes were grown in " potato sick " soil which had been sterilized and reinoculated with the three parasites *H. schachtii*, *C. atramentarium* and *C. solani*, using the parasites singly, in pairs, and all three together. Unsterilized soil and sterilized soil without reinoculation were used as controls.

During the first season the plants in the first control series—unsterilized " potato sick " soil, failed, but no significant difference appeared between the other series. " Red King " was the variety used. During the second season (1931), no reinoculations were made, and the variety " Eclipse " was grown. Only a slight difference showed between the growth of the plants infected with the fungi only, and the control plants of the second series—sterilized soil without reinoculation, but all the plants infected with eelworm, whether alone or combined with one or both fungi, failed almost as completely as the plants of the first control series—unsterilized " sick " soil.

From the fact that the plants infected with eelworm alone showed as poor growth as those where the fungus parasites were also present, the authors conclude that the nematode *Heterodera schachtii* is the main factor in " Potato sickness." The well known fact that in some cases heavily attacked plants show no evidence of disease, is attributed to the natural tolerance of the plants linked up with some natural condition favourable to the growth of the host plant. M.J.T.

(b) Johnson disagrees with the explanation given by Millard, Burr and Johnson, L. R. of the occurrence of heavily infected plants which yet remain healthy.

This, he states, is due to the later date at which these plants have become infected. In support of this he describes field observations showing that such healthy plants occur only at the margins of infected areas where the infection is gradually spreading, and further, that in July when the nematodes parasitizing the " sick " plants have all assumed the brown cyst stage, those on the healthy plants are at a less advanced stage of development. M.J.T.

(c) Roberts notes the prevalence of eelworm disease in Scotland, together with the fact that in that country, contrary to Johnson's findings, in late July the nematodes on sick plants have not fully attained the brown cyst stage although the host plants may be almost dead.

He points out that the failure to produce " potato sickness " in sterilized

soil inoculated with eelworm during the first year of experiment, described by Millard, Burr and Johnson, agrees with the findings of Buckhurst and Fryer 1931, and that in both cases acute symptoms of sickness showed in the succeeding year. This, he suggests, points to the existence of a second factor other than eelworm in the production of the disease. M.J.T.

12—Indian Journal of Medical Research.

a. GULATI, A. N.—"Is Paragonimiasis likely to spread in India?" XIX (3), 761-764, 1 map, 12 refs. [January, 1932.]

b. RAO, S. S. & IYENGAR, M. O. T.—"The escape of the filaria larva from the proboscis of *Culex fatigans*." XIX (3), 941-943, 1 pl., 6 refs. [January, 1932.]

(a) Gulati directs attention to the desirability of a search for cases of Paragonimus in man along the base of the Himalayan range including the Gangetic Plain where the necessary intermediate hosts occur.

Cases of Paragonimiasis have been recorded from wild animals in India, viz., Indian mongoose, *Felis tigris*, *Felis bengalensis*, *Viverra zibetha* and *Paradoxurus grayi*. The two cases described in man are considered to have been imported. R.T.L.

(b) Rao observed the escape of the larvæ of *Filaria bancrofti* from the extreme tip of the right labella of an infected *Culex fatigans* which had been experimentally fed on a volunteer.

The author states that the emerging filariæ have never been observed to attempt to pierce at any other point. They are stirred to activity by increased temperature or by an attempt to bite on the part of the mosquito. Mochizuki 1910 apparently was the first to demonstrate the mode of emergence correctly. A photograph is given of the specimen after fixation in Bles fluid. R.T.L.

13—Indian Medical Gazette.

a. CHOPRA, R. N. & MUKHERJI, B.—"Indian chenopodium." LXVII (1), 5-7, 9 refs.

(a) Chopra and Mukherji show that Indian chenopodium oil, derived from *Chenopodium ambrosioides* and *C. anthlemintica*, is much inferior to the American oil.

For example, the ascaridole content from a mixed Indian oil was 46 per cent. as against American oil 65 per cent. Its great value as a medical and veterinary vermifuge, however, particularly when used in combination with carbon tetrachloride or santonin, should encourage the improved cultivation of the plants in India. B.G.P.

14—Journal of the American Medical Association.

a. COBB, N. A.—" The English Word 'Nema.'" XCVIII (1), 75-. [2nd January, 1932.]

b. PLOTZ, M.—" Diphyllobothrium latum: Infestation on the Eastern Seaboard" XCVIII (4), 312-314. [23rd January, 1932.]

c. MORTON, C. B. & ARCHER, V. W.—" Ascariasis: some surgical and rœntgenologic aspects." XCVIII (6), 473-476. [6th February, 1932.]

(a) Cobb points out that the Greek word " nema " was introduced into Latin as a word for " yarn " or " thread " and has of recent years been used as a prefix or suffix in many technical words in English so that its admission for a metaphorical use as an English word is only a slight and obvious step. The word " nema " has more force than " nematoid " and is also preferable to " nematode " in that it is shorter. The plural " nemas " is preferable to " nemates " just as " lemmas " is preferred to " lemmates " and " edemas " to " edemates." There are a number of useful self explanatory derivatives viz., nemic, anemic, systemic, Nematology, Nematologist, nematize, nematosis, denematize and nematicide. R.T.L.

(b) Twenty-one cases of infection with *Diphyllobothrium latum* are reported from New York City and of these 19 occurred in the borough of Brooklyn.

Five of the cases were born in the United States bringing the total number of endemic cases on record to 31. All but two of the patients were Jewish, the youngest endemic case was 2 years old and had been born in New York. The blood in all cases shewed a mild secondary anæmia and in three it was severe in character but in none does it seem justifiable to ascribe this to the parasite. In 11 instances there was an eosinophilia ranging from 6 per cent. to 8 per cent. R.T.L.

(c) Morton and Archer have studied the histories of all patients admitted during the 5 year period 1925-1930 to the University of Virginia Hospital in which the diagnosis of ascariasis had been recorded.

Of the 110 cases collected 69 were diagnosed microscopically and had no specially characteristic symptoms, in 41 there were various abdominal symptoms, some simulating acute surgical diseases of the abdomen, especially appendicitis. In 24 cases suggestive of appendicitis with rupture or abscess or intestinal obstruction no abnormalities were found at laparotomy, while in five cases large masses of ascarids could be palpated in the intestine. The authors have devised a simple technique for the detection of ascarids in the gastro-intestinal tract. X-ray films are taken at intervals of 1, 2 and 4 hours after the ingestion of a barium contrast meal and the parasites shew up as cylindrical filling defects about 5 to 8 mm. long while later films shew these traversed by string-like shadows due to the barium entering the gut of the worms. R.T.L.

15—Journal of the American Veterinary Medical Association.

a. MORRIS, H.—" A study of intestinal parasites in horses and mules in Louisiana, with special reference to the control of colic." LXXX (1), 11-17, 1 chart, 1 fig., 3 refs. [January, 1932.]

b. HANSON, K. B.—" Parasites of ranch foxes and their treatment." LXXX (2), 202-212, 2 refs. [February, 1932.]

c. BRYANT, J. B.—" County-wide eradication of equine parasites." LXXX (2), 213-224. [February, 1932.]

d. TUNNICLIFF, E. A.—" The occurrence of *Cooperia oncophora* and *Nematodirus helvetianus* in calves." LXXX (2), 250-251. [February, 1932.]

(a) Morris's results seem to indicate that colic in horses and mules may be practically eliminated by treating all animals half yearly with suitable anthelmintics.

Over 66 per cent. of the untreated animals were rendered useless for farm work whereas 22 treated mules were carrying a maximum labour load at the end of the four-year period during which the experiments lasted. A list is given of the helminths collected during the investigation and identified by Dr. M. C. Hall and Dr. E. B. Cram. R.T.L.

(b) Hanson of the U.S. Bureau of Biological Survey is of opinion that parasitic diseases comprise an important class of the diseases involved in the fox farming industry. The important helminths are *Toxocara canis* and *Uncinaria stenocephala* in the intestine; *Eucoleus aerophilus* in the trachea; and *Capillaria plica* in the bladder. The fox in captivity harbours fewer internal parasites than those captured. The various tapeworms and flukes common in wild foxes are relatively rare on fox farms.

All pups should be dosed when between 17 and 25 days old with oil of chenopodium at the rate of 0.05 to 1 cc. per kilogram of body weight, combined with 10 times its volume of castor oil; *or* tetrachlorethylene at the rate of 0.2 cc. per kilo. Chenopodium gives more reliable results than tetrachlorethylene. Adult foxes are seldom heavily infested with the hookworm *U. stenocephala*, the severe infections usually occur in pups 3 to 6 months old. For this parasite 0.2 cc. per kilo of body weight of tetrachlorethylene is the most satisfactory treatment but fats should be withheld before and after dosing and the danger of inhalation intoxication should be avoided and artificial respiration performed on signs of collapse. Lung nematodes are unquestionably the most important helminths of ranch foxes. *Crenosoma decoratum* is found also in the north west section of U.S.A. In the common *Eucoleus* infection success is obtained best by using raised wire mesh pens and by the use at intervals of 1 to 3 weeks of the tracheal brush but the latter treatment is useless against *Crenosoma*. For *Capillaria* prevention is the only known remedy. As no one has ascertained what is a safe and effective tæniacide for foxes their rarity on ranches is a fortunate circumstance. Against the fluke *Alaria americana* carbon tetrachloride is highly effective but there is no

remedy for the " Salmon poisoning " due to the fluke *Nanophyetus salmincola* in north western California, western Oregon and south western Washington. As a preventive salmon and trout should be cooked before being fed to foxes. R.T.L.

(c) Bryant organized county eradications of bots and ascarids in horses by visiting farms and treating 50 head each morning. The animals were starved for 22 hours before and 2 hours after treatment. Carbon bisulphide was used. R.T.L.

(d) Tunnicliff reports massive infections with *Cooperia oncophora* and *Nematodirus helvetianus* associated with coccidiosis in two calves in a ranch bunch of 500 cattle in north western Montana. Thirteen others recovered so rapidly on a change of feed from alfalfa to native hay with the addition of oats or cotton seed cake that drenching with copper sulphate was not attempted. R.T.L.

16—Journal of the Egyptian Medical Association.

a. MAKAR, N.—" Cystoscopic appearances of bilharziosis of the bladder." XV (2), 43-52, 6 pls., 5 refs. [February, 1932.]

b. FAKHRY, A.—" Incidence, parasitological findings and treatment of pellagra." XV (2), 53-64, 3 graphs, 3 tables. [February, 1932.]

c. NAZMI, M.—" A modified loop for recovering helminth ova from stools prepared by Willis floatation method." XV (2), 83-84, 2 figs., 2 refs. [February, 1932.]

(a) Makar has illustrated in 16 beautiful coloured figures the main bilharzial lesions of the bladder as seen through the cystoscope. The appearances depend essentially on the infiltration of the tissues with bilharzia eggs and the resulting pathological processes.

The lesions are usually limited to the trigone and the ureter openings whence they may spread to the posterior wall and later to the rest of the bladder. The mucous membrane may show (i) bilharzial hyperæmia (ii) bilharzial tubercles (iii) bilharial nodules (iv) bilharzial ulcers and (v) bilharzial papillomata. The submucosa may become infiltrated with eggs and form tumour-like masses even larger than a tangerine. They are covered with normal mucous membrane or by tubercles and nodules and, bulging into the bladder, may resemble sarcomata. The effect of infiltration of the deeper tissues is shown only by diminished vascularity of the mucous membrane and by hypertrophy of the bladder wall associated with difficulty of micturition. Reduction in the capacity of the bladder may render cystoscopy impossible. The author describes also the appearances of some of the complications arising from sepsis and of carcinomatous growths. R.T.L.

(b) Fakhry draws attention to the high percentage of urinary and intestinal bilharziosis which accompanies pellagra in Egypt. Out of

175 pellagrins who were seen at the Ankylostoma Hospital at Kafr-El-Zayat only two were negative for bilharzia giving an incidence of 92.3 per cent. against that of 68.6 per cent. obtained among the other patients. Treatment with tartar emetic did not give any such improvement in the pellagra symptoms as that which followed the use of sodium thiosulphate.

R.T.L.

(c) Nazmi has improved upon the platinum loop as used for lifting the film of floating ova from the surface of the concentrated salt solution in the Willis technique.

The modification consists in forming the loop by twisting it round an ordinary pencil giving it a diameter of about 9 mm. This loop is bent at 110° to the wire and a second bend is made 2 cms. from the first so that when the wire is fixed in a holder the larger loop can be made to skim instead of dipping under the surface. R.T.L.

17—Journal of Helminthology.

a. GLADSTONE-SOLOMON, S.—"Helminths from Cyprus." x (1), 1-14, 1 pl., 20 refs. [February, 1932.]

b. MORGAN, D. O.—"*Oxyuris stroma* Linstow, 1884." x (1), 15-20, 6 figs., 4 refs. [February, 1932.]

c. GOODEY, T.—"On the Nomenclature of the Root-gall Nematodes." x (1), 21-28, 13 refs. [February, 1932.]

d. CAMERON, T. W. M.—"On a New Species of Oxyuris from the Grey Squirrel in Scotland." x (1), 29-32, 5 figs., 3 refs. [February, 1932.]

e. GOODEY, T.—"Some Observations on the biology of the Root-gall Nematode, *Anguillulina radicicola* (Greeff, 1872)." x (1), 33-44, 2 figs., 13 refs. [February, 1932.]

f. TRIFFITT, M. J., BUCKLEY, J. J. C. & McDONALD, W. A.—"On a New Parasitic Protozoon associated with a Sickness in a Bilharzian Intermediate Host." x (1), 45-52, 5 figs., 6 refs. [February, 1932.]

g. IMPERIAL BUREAU OF AGRICULTURAL PARASITOLOGY.—"Notes and Memoranda No. 5—Differential Diagnosis of Plant-parasitic Eelworms." x (1), 53-64, 22 refs. [February, 1932.]

(a) Gladstone-Solomon gives a useful check list of the helminth parasites found in domesticated and certain other animals and in man in Cyprus.

The list comprises 25 species of Nematodes, 12 of Cestodes, one Trematode and one Acanthocephala. Many are recorded for Cyprus for the first time but none are new to science and few are rare. A remarkably heavy infection of the cat with *Dithyridium elongatum* is recorded *Tænia echinococcus* adults are common in Cyprian dogs. Habronema nodules occurred in the conjunctiva of a mule. The histological changes are illustrated in a plate. R.T.L.

(b) Morgan gives reasons for differentiating the species of Oxyuris found in the field mouse *Apodemus sylvaticus* from that commonly parasitic

in rats and mice and known as *Syphacia obvelata*. Their confusion is ascribed to the rarity of male worms. An examination of these has enabled Morgan to identify the species as *Syphacia stroma* v. Linstow (1884). R.T.L.

(c) Goodey, as a result of bibliographical research, has revealed a situation in the nomenclature of certain gall-producing eelworms which is incompatible with the International Rules. He suggests, as a solution, the name *Anguillulina radicicola* for the previous *Tylenchus hordei*, and *Heterodera marioni* for the *H. radicicola* thus displaced.

A paper by Greeff (1872) described what would later have been called *Tylenchus hordei* galls on certain grasses under the name *Anguillula radicicola* : it also described galls on *Dodartia orientalis* which he assumed to be due to the same eelworm but which were later shown by Müller (1884) to be caused by a *Heterodera* species. In ignorance of the details of the grass-gall material (Greeff's description of which he had not seen) Müller transferred Greeff's *Anguillula radicicola* to *Heterodera*. Goodey is satisfied that Greeff's *Anguillula radicicola* is the worm afterwards known as *Tylenchus hordei* ; the name *radicicola* has priority over *hordei* and (as Baylis and Daubney showed in 1926) the generic name *Anguillulina* Gervais and van Beneden, 1859 has priority over *Tylenchus* Bastian, 1865 ; hence the correct name of the grass-gall eelworm is *Anguillulina radicicola* (Greeff, 1872) Goodey, 1932.

The name of the root-knot eelworm, *Heterodera radicicola* (Greeff, 1872) Müller, 1884, now lapses as a homonym and Goodey suggests that its correct name, the next in order of priority, is now *H. marioni* (Cornu, 1879) Goodey, 1932. A list of plant-parasitic *Anguillulina* and *Heterodera* species is appended. B.G.P.

(d) Cameron adds a new species of *Enterobius*, named *E. sciuri*, to the little known helminths of the American grey squirrel in Scotland. It differs from the already described species in having only three pairs of anal papillæ in the male instead of four. In the genus *Sciurus* three Oxyuris species have been previously recorded viz. ; *O. acutissima*, *O. sciuri* and *O. ungula*. R.T.L.

(e) Goodey describes the larval stages and pathogenicity of the eelworm *Anguillulina radicicola* (=*Tylenchus hordei*) causing root-galls on barley, *Elymus arenarius*, and other Gramineæ.

On *E. arenarius* material Goodey showed that 1st stage larvæ are infective and can give rise to galls : he was able to follow development through the four ecdyses, and to show by experimentally infecting barley that the period from 1st stage larva to adult occupies about 20 days. Egg-laying begins after another 10 or 12 days but 64 days elapsed altogether before 1st stage larvæ of the next generation were found. Since some galls were found disintegrating after about 60 days it is quite probable

that there is only one generation of eelworms per gall. Reviviscence after five weeks of dessication was established, but only for 1st stage larvæ.

Transverse sections of galls on *E. arenarius*, drawings of which are reproduced, show that root-hairs are absent from the otherwise normal epidermis and that great proliferation and disintegration of the cortical cells occur. The central vascular cylinder, its cells and those of the endodermis are enlarged, and the walls of the latter are abnormally thin and often broken. The worms occur in cortical spaces formed by disintegration of the cells and appear not to puncture intact cells; they would therefore feed on exosmosed nutrients. The histological picture is suggestive of toxic rather than mechanical injury. A list of 12 species of Gramineæ, recorded as naturally or artificially infected, is appended. B.G.P.

(f) Triffitt, Buckley and McDonald have found a new species of the genus *Barrouxia* in the mantle tissues of a large number of *Bulinus tropicus* which developed acute symptoms of a disease to which about 50 per cent. succumbed.

The morphology of the oöcyst stage is described; no other stages were found and the method of dissemination remains unknown. The symptoms of the sickness, and the ultimate recovery of the surviving snails on their transference into pond water following treatment for half-an-hour in a 1 in 500,00 solution of chlorine, are described.

Transmission experiments gave negative results. The name *Barrouxia bulini* is suggested for the parasite. The possible significance of the parasite as a factor in the production of disease in this Bilharzian host is discussed. M.J.T.

(g) The Imperial Bureau of Agricultural Parasitology has produced, as No. 5 in its series "Notes and Memoranda," an account of recent changes in the nomenclature of plant-parasitic eelworms, a key for the identification of the four main genera, and a list of the principal species giving hosts and references to adequate descriptions.

The changes in nomenclature are: the substitution of the name *Pathoaphelenchus* for the plant-parasitic species of *Aphelenchus*; the reversion to *Anguillulina* in place of *Tylenchus*; and the new combinations *Anguillulina radicicola* for *Tylenchus hordei* and *Heterodera marioni* for *H. radicicola*. [This last point is discussed in (17c) above.]

The generic characters are grouped, for purposes of identification, under the headings: General body form, Female characters, Male characters, Œsophageal glands, and Stylet. The list of economically important species gives the principal host or hosts, with some indication of the lesions produced, and citations of published descriptions, full references to which are collected at the end of the article. B.G.P.

18—Journal of Tropical Medicine and Hygiene.

a. NORONHA, A. J.—"A Note on a Filarial Worm found in sections of a Nasal Tumour excised from a Child, with Special Reference to the Embryo." XXXV (5), 74, 5 microphotos, 1 text fig. [March, 1932.]

(a) Noronha gives a detailed description of the embryos found in sections of a filarial tumour excised from the nose of a 6 months old child at Poona, an account of which previously appeared in the Indian Medical Gazette (October, 1931).

Sections shew that the worm embedded in the tissue is a female and that the uterus occupies the entire cœlomic cavity and is filled with embryos which measure 350μ to 450μ by 17.5μ long and are peculiar in that the tail is not formed by a gradual thinning of the body but by a more or less sudden narrowing at the posterior fifth into a whip-like pointed filament recalling that of the embryo of the guineaworm. The cuticle of the embryo is transversely striated and there are nuclei-free spaces at the anterior and posterior ends as well as at the junction of the anterior fifth with the rest of the body. The structure of the tumour resembles that caused by *Onchocerca*. R.T.L.

19—Memoirs of the London School of Hygiene and Tropical Medicine.

a. BLACKIE, W. K.—"A Helminthological Survey of Southern Rhodesia." No. 5, 3 figs., 7 pl., 29 tables. [February, 1932.]

(a) Blackie's report on the survey made by himself and Mr. McDonald is based on a study of the incidence of helminth infestations in the large Native Reserves scattered all over Southern Rhodesia which have been set apart for the exclusive use of the indigenous Natives, supplemented by examinations of the mixed, non-indigenous and indigenous inmates at the Salisbury Native Hospital. The conclusion reached is that the helminth disease of major importance in the Colony is urinary schistosomiasis. Hookworm infestations are also widespread but apparently light in character. In some of the eastern districts *Ascaris lumbricoides* almost rivals hookworm in importance but elsewhere it is infrequent. Filariæ are rare. The high incidence of *Ternidens deminutus* as a colon parasite liable to be mistaken for hookworm is commented upon but little is known of its clinical or pathological significance. The whipworm and *Oxyuris vermicularis* were of little importance. Of the rarer parasites mention is made of a single case of *Physaloptera caucasica* while its frequency is noted in the grey monkey and the baboon. In one native, eggs of a species of Trichostrongyle were found and in another, those of an Oesophagostome. The embryos of *Strongyloides fülleborni* and the eggs of *Hepaticola hepatica*, of *Heterodera radicicola* and of a Spirurid were noticed during the routine microscopical examinations of fæces.

Examination of locally grown pigs gave no evidence of *Trichinella spiralis*. Contrary to popular belief Tapeworm infestations were present in the natives to a very limited extent and were met with only in the Reserves of the south-east corner of the Colony, but those natives entering the Colony from Portuguese territory appeared to be more uniformily infested. Although cases of Hydatid have been recorded in man in Southern Rhodesia no infections were found by the author either in man or sheep or cattle, while the abattoir authorities in Salisbury state that it is observed only on three or four occasions annually. *Hymenolepis nana* has a fairly widespread distribution but the incidence is not high. Cases were observed in children and adults but none in Europeans. Single cases of *Hymenolepis diminuta* and *Dipylidium caninum* were found and these are the first to be recorded for Southern Rhodesia.

As befits the importance of the disease a chapter is devoted to Schistosomiasis. Both *S. hæmatobium* and *S. mansoni* were found in the natives of nearly all the districts visited. The incidence in the males is only slightly higher than in the females. The author remarks that only at post-mortem was it possible to determine the true significance to be attached to the presence of schistosome eggs in the urine or fæces of individuals in apparent good health. As a rule the number of invading parasites was small and although there was little or no clinical evidence, there were often extensive and damaging pathological changes.

The intermediate hosts were determined by experiments on animals. *Physopsis globosa* is the common intermediary for *S. hæmatobium*, and *Planorbis pfeifferi* for *S. mansoni*. The bionomics of these molluscs and their seasonal occurrence is discussed.

A third schistosome already reported from man and sheep in the Transvaal was discovered in sheep, cattle and man in Southern Rhodesia. This form, *S. mattheei*, occurred in no less than 30 per cent. of the native bred cattle and in 11 per cent. of the sheep examined. Ten cases were discovered in man. A baboon also was found naturally infected. The intermediate host was ascertained experimentally to be *Physopsis globosa*. R.T.L.

20—North American Veterinarian.

a. QUIN, A. H., Jr.—" Some peculiarities of anthelmintics." XIII (3), 36-38. [March, 1932.]

b. LAW, R. G. & KENNEDY, A. H.—" Dioctophyme renalis of mink." XIII (3), 45, 2 refs. [March, 1932.]

(a) Quin maintains that " More worms less resistance " is a wise maxim in the use of anthelmintics. Preliminary fasting should not physically weaken the subjects. Examples of improper preparation are given. Dosage should not be based on weight only but also upon condition. Each species of animal has idiosyncrasy to certain drugs.

Geese are especially susceptible to santonin. Kamala may be fatal to a good sized turkey although the same dose can be tolerated by a chicken. Oil of chenopodium is risky for pregnant mares, and "windy " or " heavey"

horses especially of advanced age are intolerant of carbon disulphide. Lambs on certain concentrates or suffering from hypocalcemia react badly to carbon tetrachloride. Santonin when used should be combined with calomel and followed by a purge. A follow up is essential with oil of chenopodium and carbon derivatives. Epsom and Glauber salts and sodium hyposulphite are excellent in pigs, chickens and lambs but too strong a solution may be disastrous to chickens. R.T.L.

(b) The kidney worm *Dioctophyme renalis* is one of the commonest parasites affecting mink in the vicinity of Kirkfield, Ontario and its presence also in ranch-raised mink is invariably associated with fish-feeding. The pelt of the affected animal is dry and thin. At post-mortem as many as six worms may be found. Usually there are more females than males.
R.T.L.

21—Philippine Journal of Science.

a. CHITWOOD, B. G.—"A new species of hookworm from a Philippine civet." XLVII (2), 259-261, 1 pl., 2 refs. [February, 1932.]

(a) Chitwood proposes the name *Uncinaria philippinensis* for a new hookworm found in the small intestine of the civet *Paradoxurus philippinensis*. It is distinctly smaller than any of the three other species of the genus.

It has no distinct sutures in the buccal capsule such as occur in *Uncinaria lotoris*. From *U. criniformis* and *U. stenocephala* it differs in the relative thickness of certain of the bursal rays, and from *U. stenocephala* in the size also of the spicules which measure only 1.2 to 1.5 mm. long.
R.T.L.

22—Policlinico. Sezione Medica.

a. VALENTINI, A.—"Cisti da echinococco endocranica e localizzazioni parietali." XXXIX (2), 101-112, 2 figs., 17 refs. [1st February, 1932.]

(a) Valentini describes, with full clinical details, a rare human case of endocranial hydatid which was successfully removed with perfect restitution of all the nervous functions.

The cyst was located from fronto-occipital and lateral skiagrams (reproduced in the article) and its presence was confirmed by strongly positive Casoni and Pontano reactions. Eosinophilia was 4 per cent. The cyst, which proved to be sterile, lay between the periostium and the dura and, being of the size of a small orange, caused a considerable depression in the right parietal lobe. Discussing the pathogenesis of the resulting syndrome, the author reviews various theories on the function of this lobe. This is the fourth case of hydatid, in one year, from a small pastoral community in the province of Macerata. B.G.P.

23—Proceedings of the Royal Society of Medicine.

a. MAYOU, M. S.—"A worm-like structure in the anterior chamber." XXV (4), 474-475, 1 fig. [February, 1932.]

(a) Mayou illustrates a worm-like structure lying on the iris of a soldier who had been hit in the left eye by an explosive shell in Gallipoli. The author doubts if the structure is actually a nematode. It is more probably an artifact. R.T.L.

24—Roosevelt Wild Life Annals.

a. VAN CLEAVE, H. J. & MUELLER, J. F.—"Parasites of the Oneida Lake Fishes. Part 1. Descriptions of New Genera and New Species." III (1), 1-71, 14 pl. [January, 1932.]

(a) Van Cleave and Mueller have obtained a large number of species of parasitic worms from about 1,000 freshwater fish from Oneida Lake, New York. The new forms only are dealt with in this communication. Taxonomic descriptions are given of three new genera and 12 new species of Trematodes and three new species of Nematodes. An account of the more general biological results will follow later.

In the large catfish *Ictalurus punctatus*, hundreds of minute Plagiorchiidæ (Reniferinæ) were found and for them the new genus *Vietosoma*, Type *V. parvum* n. sp. is created.

In the Golden Shiner *Notemigonus crysoleucas* is an unusual Allocreadiinæ. It is near to *Plagioporus* (but the uterus reaches almost to the posterior extremity while the cirrus extends backwards almost the entire length of the acetabulum) and is named *Plagicirrus*, Type *P. primus* n. sp.

In many of the fishes there were minute Trematodes with a single circle of spines around the mouth recalling *Allacanthochasmus* and belonging to the family *Heterophyidæ*. This has been named *Neochasmus umbellus* n.g., n. sp., and made the type of a new sub-family *Neochasminæ:* its type-host is *Micropterus salmoides*.

The fish *Stizostedion vitreum* provided three new species viz. *Ancyrocephalus oculeatus* n. sp. on the gills, *Sanguinicola occidentalis* n. sp. in the heart, and in the intestine an immature form *Apophallus americanus* n. sp. which also occurred in *Perca flavescens*. The latter fish harbours also four other intestinal flukes viz., *Microphallus medius* n. sp., *Bunodera sacculata* n. sp., *Crepidostomum solidum* n. sp. (which in a footnote is stated to be a synonym of *C. cooperia* Hopkins 1912) and *Neascus oneidensis* n. sp., a still encysted form evidently recently taken into the stomach. It occurred also in *Esox lucius*.

The chain pickerel *Esox niger* was infested abundantly with *Macroderoides flavus* n. sp. From the rock bass *Ambloplites rupestris* a single specimen of *Microphallus obstipus* n. sp. was collected.

The three new Nematode species are (i) *Hedruris tiara* from the stomach of

Esox niger and *Erimyzon sucatta oblongus*, (ii) *Dacnitoides robusta* in the intestine of *Ameiurus nebulosus* and (iii) *Capillaria* (*Thominx*) *catenata* in the intestines of *Eupomotis gibbosus*, *Ambloplites rupestris* and *Stizostedion vitreum*. This Capillaria differs from *C. catostomi* Pearse, 1924, the only other species described from fishes of North America, in the number and arrangement of the para-œsophageal cells, length of body and position of the vulva. R.T.L.

25—Semana Médica.

a. JÁUREGUI, P. & SUBIZA, V.—" Coletórax hidático." XXXIX (5), 363-366, 5 figs. [4th February, 1932.]

(a) Jáuregui and Subiza detail the clinical history of a human case of a hydatid in the liver which subsequently penetrated through the diaphragm and ruptured into the right pleural cavity.

Pleural punctures revealed biliary pigments but no scolices. A preliminary laparotomy, after fruitless liver punctures, revealed an enlarged liver with irregular adhesions of the superior surface to the diaphragm : the liver offered no resistance to palpation. By incision at the level of the seventh rib the cyst, the size of an orange, was located and drained—it contained bile and numerous brood capsules, both living and decomposing. Apparently bile ducts had ruptured into the cyst and then the cyst into the pleural cavity. At no stage were hooks or scolices found in the fæces. The patient made a good recovery but the authors admit that some scolices may have been left in the pleural cavity. Five skiagrams illustrate the course of the pleural complications. B.G.P.

26—Southern Medical Journal.

a. SILVA, R.—" Ocular Onchocercosis." XXV (2), 113-117. [February, 1932.]

b. STILES, C. W. & PARK, W.—" Hookworm Disease in certain parts of the South : A new plan of attack." XXV (2), 189-192. [February, 1932.]

(a) Silva summarizes the work of the Commission of Onchocercosis of the Mexican Department of Health and points out that the widely accepted " toxic " theory of the origin of the ocular symptoms must be abandoned as the larvæ of the Onchocerca have been found in the choroid and the cornea causing perivascular infiltration and hyperplasia of the interfascicular connective tissue of the optic nerve.

Experiments have shown that these larvæ have a positive phototaxis thus explaining their presence in the superficial layers of the dermis and in the cornea, anterior chamber, iris and fundus near the optic nerve. Zuniga's demonstration that the larvæ are killed in a 1 in 1,000 solution of plasmochin has been applied by Torroella to the arrest of symptoms. The solution is injected into the anterior chamber to replace the aqueous humor. This can be done without any ill result and leads to the death of the larvæ in

the cornea. Hoffman's work regarding the rôle of *Simulium metallicum*, *S. mooseri* and *Eusimulium ochræceum* as vectors in the Oaxaca region of Mexico has been confirmed in Guatemala by the Harvard Expedition. R.T.L.

(b) Stiles and Park have ascertained on a tour of the Southern United States that, contrary to popular belief, hookworm is still prevalent amongst school children and that it plays a definite rôle in causing mental retardation. They believe that by observing certain outstanding symptoms a quick clinical inspection gives just as accurate an indication of the need of hookworm control in a given school or county as the more tedious, time-consuming and expensive methods of microscopical examination and egg counting.

They propose to utilize the intense interest of the teachers in the progress of their students to ensure that their backward pupils come under medical treatment which, under the changed conditions of to-day, can in many cases be relegated to the private practitioner and so effect a saving in State expenditure. The teachers are able, without medical supervision, to classify their pupils into five categories, viz. : (i) " backward " and " repeater " children, (ii) puny, pale, anæmic, under-nourished and physically under developed, (iii) girls maturing slowly or irregularly or with amenorrhœa or irregular menses, (iv) those with recent history of ground itch and (v) all others not placed in (i) to (iv). Those in (v) will probably be healthy or only carriers while (i) to (iv), if sent to the State diagnostic laboratories, would result in a great increase in the percentage of positives reported. The general conclusion reached is that a fundamental change in the daily habits must be effected and that this will take about three generations of educational effort. R.T.L.

27—Taiwan Igakkai Zasshi. [Journal of the Medical Association of Formosa.]

a. KATSUTA, I.—" Studies on Trematodes whose Second Intermediate Hosts are Fishes from the Brackish Waters of Formosa. (Report II.) On a new Trematode " Metagonimus minutus " of which the Mullet is the second intermediate host." xxxi (1), (No. 322), 2-4, 9 figs. [January, 1932.]

(a) *Metagonimus minutus* Yokogawa [1932 ?] differs from *M. yokogawai* (i) in its size. It measures only 0.432 to 0.504 mm. long by 0.252 to 0.396 mm. broad. (ii) The œsophagus is short; (iii) the testes are equal and symmetrically placed. The eggs are 0.023 by 0.013 mm. The seminal vesicles are longer than the other organs. The second intermediate host of *M. minutus* is the mullet, that of *M. yokogawai* is the trout. The species is also differentiated from *M. ovatus* the second intermediaries of which are the gibel, carp and dace. R.T.L.

28—Transactions of the American Microscopical Society.

a. HUNTER, G. W., III.—" A new trematode (*Plesiocreadium parvum*, sp. nov. from fresh water fish." LI (1), 16-21, 1 plate, 1 table, 6 refs. [January, 1932.]

b. HUNTER, G. W., III.—" An artificial lake with a low percentage of infected fish." LI (1), 22-27, 3 tables, 7 refs. [January, 1932.]

c. LA RUE, G. R.—" Morphology of *Cotylurus communis* Hughes (Trematoda, Strigeidæ)." LI (1), 28-47, 4 pl., 16 refs. [January, 1932.]

d. KREIS, H. A.—" *Trionchonema rusticum* n.g., n. sp., a parasitic nematode from the land snail, *Polygyra espicola* Bland (Helicidæ)." LI (1), 48-56, 2 pl. [January, 1932.]

(a) Hunter describes a very small trematode, 1 mm. long, found in the upper intestine of the fishes *Lepisosteus osseus* and *Amia calva* from Lake Champlain, New York. It is closely allied to *Plesiocreadium typicum* but is considered a distinct new species, *P. parvum*.

P. parvum differs from *P. typicum* mainly in the shapes and sizes of the body and various organs. The generic characteristics of *Plesiocreadium* Winfield, 1929 are slightly modified so as to accommodate the new species. The latter superficially resembles *Macroderoides spiniferus*, which was also found in *Lepisosteus osseus*, but sections reveal a closer affinity with *Plesiocreadium*. B.G.P.

(b) Hunter has examined 67 fish, belonging to 11 species, from the Sacandaga Reservoir recently made by damming the Sacandaga River, and has found only three species of helminths in only 13 of the fish, belonging to 6 species.

A previous examination of 1,273 fish, from the same 11 species, taken from various New York waters revealed over 70 per cent. infected with trematodes, cestodes, nematodes or acanthocephala. Thus the fish from Sacandaga Reservoir are abnormally under-parasitized, the only helminths found being one nematode, *Cystidicola harwoodi* from *Salvelinus fontinalis*, and two cestodes, *Proteocephalus fluviatilis* from *Micropterus dolomieu* and *P. pinguis* from species of *Notemigonus*, *Esox* and *Perca*. No molluscs were found, which explains the absence of trematodes. As might be expected in a new reservoir, the parasitological situation is typical rather of river fish than of lake fish. *Notemigonus crysoleucas crysoleucas* is recorded as a new host for plerocercoids of *Proteocephalus pinguis*.

B.G.P.

(c) La Rue describes in great detail the adult morphology of *Cotylurus communis*, a strigeid trematode described previously only in its tetracotyle and cercaria stages, and parasitic in the bursa Fabricii and intestine of the herring gull.

This form differs obviously from *C. platycephalus* and, while it somewhat resembles *C. variegatus*, is probably a valid species. Its second intermediate host was in this case the trout perch (*Percopsis omiscomaycus*) from Douglas Lake, Michigan, which was fed experimentally to young gulls.

Adults are about 6 mm. long. The oral sucker and acetabulum are weakly developed and adhesion is secured by the anterior holdfast organ and the surrounding cup, into which the host tissues are drawn and securely held. The secretion of the so-called adhesive gland of the holdfast organ appears to erode the host tissues. The surfaces of the holdfast and cup, being in intimate contact with the richly vascular host tissues, probably function as diffusion membranes subserving nutrition like a mammalian placenta. If so, the vehicle for nutriment is probably the liquid in the extensive inter-communicating excretory spaces which ramify throughout the parasite's body. In support of this the author points out that (i) the bursa Fabricii of the host contains but little nutriment, and (ii) the cæca of the parasite are always almost free from débris.

The body bears spines anteriorly, but not the suckers. The genital atrium is postero-dorsal in position and its opening presents very variable external appearances. The complex relations of the flame cells and tubules to the excretory spaces have not been worked out. B.G.P.

(d) Kreis has discovered in an exclusively terricolous snail (*Polygyra espicola*) a nematode which in adult and filariform-larval stages, slightly resembles *Strongyloides* but which has in the adult three œsophageal spears, a sex-partite cavity in the bulb, and over 100 ova. The male has long, arcuate, equal spicules, a gubernaculum, and 16 papillæ four of which are post-anal. On one female, six males and two filariform larvæ the author has based the description of what is regarded as a new genus and species, *Trionchonema rusticum*. No rhabditiform larvæ have as yet been encountered. B.G.P.

29—Transactions of the Royal Society of Tropical Medicine and Hygiene.

a. OWEN, H. B. & HENNESSEY, R. S. F.—" A note on some ocular manifestations of helminthic origin occurring in natives of Uganda." XXV (4), 267-273, 1 fig., 6 refs. [January, 1932.]

b. BAYLIS, H. A.—" On a *Cœnurus* from man." XXV (4), 275-280, 3 figs., 1 table, 9 refs. [January, 1932.]

(a) Owen and Hennessey suggest that the three pathological conditions: subconjunctival nodules, " bung-eye," and " bulge-eye," met with among 23 native cases in Uganda, are probably to be explained by invasion of the ocular tissues by a nematode.

In three cases of nodules, worms were found but could not be identified from sections. Histologically, all the nodules showed necrotic areas and somewhat resembled tubercles: an injected guinea-pig failed to develop tuberculosis, however. Clinically, all cases showed a high average eosinophilia (20.3 per cent.), higher than that normally present in ankylostomiasis (about 12 per cent.), which condition complicated some of the cases. The eggs of hookworm and trichuris in the fæces and *Microfilaria perstans* in the blood, in certain cases, were the only other clinical

signs of helminthiasis. The histological picture was not in accordance with that of a (probably) *Habronema* nodule nor with published descriptions of *Thelazia* infections. B.G.P.

(b) Baylis has re-examined the cœnurus cyst excised from a subcutaneous tumour in the forearm of a native of the Belgian Congo and described by Taranelli and Dubois (1931), but could not definitely identify it.

There were resemblances both to *Multiceps multiceps* (normally from the brain of sheep) and to *M. serialis* (normally from the connective tissue of rabbits), since detailed examination of the scolex revealed the large hooks as rather more like those of the former and the small hooks more like those of the latter. But individual and age variations are such that it is even doubted whether the larvæ of these two forms can be satisfactorily differentiated on purely morphological grounds. B.G.P.

30—Tropical Agriculture.

a. BRIANT, A. K.—"Tomato diseases in Trinidad." IX (3), 63-71, 1 table, 3 figs. [March, 1932.]

(a) The common root-knot eelworm *Heterodera radicicola* is a frequent parasite on the roots of tomatoes in Trinidad. Its importance is due not only to the direct effect on the plant but also because the injuries to the root system probably make the plant more susceptible to attack by other organisms. R.T.L.

31—United States Naval Medical Bulletin.

a. HAIGLER, F. H.—"Carbon tetrachloride poisoning. Report of cases." XXX (1), 137-139. [January, 1932.]

(a) Haigler reports an incident on board U.S.S. *Lexington* which clearly emphasizes the danger of handling carbon tetrachloride in confined or poorly ventilated spaces. The chemical was stored below decks and in tins which were rusty and later became leaky. The account refers solely to the dangers from inhalation and not through its medicinal use in helminthiasis. R.T.L.

32—Veterinary Bulletin. [Washington.]

a. NIGHBERT, E. M. & BUTCHER, F. D.—"The control of bots, stomach worms, and large intestinal roundworms of horses." XXVI (1), 59-66. [January, 1932.]

(a) In some localities in the United States horse owners, veterinarians, local farm organizations, State extension agencies, etc., assisted by officials of the United States Department of Agriculture have united to control

intestinal parasites. Proper medication is necessary in addition to sanitary measures. All horse stock in a given territory should be treated on a specified date. Sanitation methods include the collection and storage of manure, rotation of pastures and rotation of animals. Effective medication is attained by the use of carbon disulphide in doses corresponding to 1.5 fluid dram for each 250 pounds of weight. The use of oils or purgatives in combination with or following the treatment is detrimental. The treatment is administered once or twice during the winter in late December or early January. R.T.L.

33—Veterinary Medicine.

a. SCOTT, T. O.—" Parasites a probable cause of colic in the horse." XXVII (1) 22. [January, 1932.]

b. MAGENS, H. J.—" Pyrethrum and its uses in veterinary medicine." XXVII (1), 23, 3 figs., 4 refs. [January, 1932.]

c. CRAM, E. B.—" Recent advancement in our knowledge of poultry parasitism." XXVII (1), 30-34, 28 footnote refs. [January, 1932.]

d. BOURNE, R. F.—" Biological relationships in the control of canine tæniasis." XXVII (2), 58-60. [February, 1932.]

(a) Scott gives a brief clinical note of a case of colic in which large numbers of " bots " and *Habronema megastoma* were found at post-mortem. The latter were expelled upon pressure from several openings in a " tumefaction about the size of a man's fist in the walls of the stomach." R.T.L.

(b) Magens reviews the recent work on the internal use of pyrethrum in veterinary medicine and cites the work of Chevalier (1928) on its effects on internal parasites.

A dilution of 1 in 250,000 kills Ascarids, Oxyurids and Tænias. Doses of 10 mgm. is a completely effective cure for dogs, and puppies will take large doses without discomfort. This drug is effective also in " verminous anæmia " in horses. Twelve hours starvation without water followed by 1 gram of pyrethrum in 20 grams of castor oil together with 3 or 4 quarts of water is the established treatment. A second treatment, of half dose only, should follow five or six hours later.

(c) Miss Cram summarizes the advances in our knowledge of the parasites of poultry which have been made since she similarly surveyed the field three years ago.

The fluke *Collyriclum faba* which parasitizes the skin of chickens and turkeys occurs in the English sparrow and is probably spread by dragon flies. Snails spread *Cotylurus flabelliformis* of ducks. An *Amphimerus* has been recorded in the domesticated turkey in North Dakota. The work of Ackert and others on the relation of vitamins in the diet to resistance to parasitism with *Ascaridia lineata* is abstracted. The problem of the wild bird in the spread of gapeworms in poultry as investigated by Taylor

is summarized. Intermediate hosts have been determined by Cram for six spirurids of poultry and game birds. M. F. Jones has conclusively implicated beetles in the spread of *Hymenolepis carioca* and *Raillietina cesticillus*—the most frequent tapeworms of poultry around Washington, D.C. For *Davainea proglottina* Sawyer & Hamilton and Jones have found additional molluscan intermediaries. The common tapeworm of turkeys *Metroliasthes lucida* has been developed in grasshoppers. M. F. Jones has also described *Raillietina magninumida* a tapeworm of the guinea fowl which is spread by ground beetles. Stoddard had reported that the use of bantams for the rearing of quail chicks led to serious infestations with internal parasites and in co-operation with him Cram, Jones and Allen succeeded in experimentally demonstrating cross-transmission in a considerable number of the 16 species of round worms and 5 species of tapeworms which were found in the bantams. R.T.L.

(d) Bourne in a general article on the tapeworms of the dog points out that the importance of any given type of tæniasis depends not only upon the effect it may produce upon the definitive host but often upon the extensive damage produced by the larval stages in the intermediate hosts where it may constitute a serious health problem.

The collection and identification of tapeworms met with in the routine of general practice is urged so that more detailed knowledge may be acquired of the frequencies of the various cestode species in different geographical areas. The control of tapeworm infestation through the larval forms is frequently overlooked by the general practitioner. R.T.L.

34—Veterinary Record.

a. GRAY, H.—" Some medical and surgical conditions in the dog." XII (1) 1-10. [2nd January, 1932.]

b. TAYLOR, E. L.—" Fascioliasis warning." XII (8), 213-215. [20th February, 1932.]

(a) Gray states that tapeworms and roundworms in cats and dogs in England are seldom a cause of inconvenience and that animals in the best condition seem to have most worms.

In a cat very fat and in the pink of condition he has counted over 1,000 *Tænia elliptica*, several *Tænia crassicollis* and many *Ascaris mystax*. A large ascarid is often found (post-mortem) in the bile duct without causing occlusion or jaundice. R.T.L.

(b) Taylor writing in February, 1932, states that there are indications that fascioliasis will become prevalent in sheep in England during the next few months and that considerable losses may be anticipated.

He gives simple and concise instructions for the post-mortem examination of sheep which have died and advises the use of 1 cc. carbon tetrachloride

in December and February after an ordinary summer and at monthly intervals between October and April after an unusually wet summer or on particularly " flukey " land. As a preventative of carbon tetrachloride poisoning the sheep should be previously placed on a mineral mixture containing calcium salts or fed for some days on clover. R.T.L.

35—Zeitschrift für Parasitenkunde.

a. GEBAUER, O.—" Zur Kenntnis der Parasitenfauna der Gemse." IV (2), 147-219, 70 figs., 88 refs. [January, 1932.]

b. SCHUURMANS STEKHOVEN, J. H., Jr. & BOTMAN, P. J.—" Zur Ernährungsbiologie von *Proleptus obtusus* Duj. und die von diesen Parasiten hervorgerufenen reaktiven Änderungen des Wirtsgewebes." IV (2), 220-239, 3 figs., 20 refs. [January, 1932.]

(a) Gebauer has written a comprehensive monograph on the nematode parasites of the chamois in which each of the species is fully described and illustrated. The monograph includes one new genus, three new species and a new name.

The nematodes are dealt with seriatim, under the headings " Intestinal Nematodes " and " Lung Nematodes," in a special section, preceeding which is a general section dealing with historical data, location, intensity and pathogenicity, tabulated statistics, fæcal examinations, and technique. In addition to 17 species of intestinal nematodes and six species of lungworms, mention is made of *Cysticercus tenuicollis* in 10 cases, *Fasciola hepatica* in two cases, and unidentified tapeworms in 13 cases. The new names included are as follows :—*Ostertagia böhmi* n. sp., *Muellerius tenuispiculatus* n. sp., *Protostrongylus austriacus* n. sp., *P. rupicapræ* nom. nov. [=*Strongylus* (*Synthetocaulus*) *rufescens rupicapræ I Stroh* Lutz, 1929] and *Neostrongylus linearis* n. gen. [=*Synthetocaulus linearis* Marotel, 1913.]

O. böhmi, found also in Roe Deer, has a male 6 to 7 mm. long : it differs from its nearest congeners, *O. asymmetrica*, *O. houdemeri* and *O. schulzi*, in the unmistakable form of the spicules. *M. tenuispiculatus*, scarcely visible to the naked eye, is about 10 mm. long but less than 0.05 mm. wide ; and the spicules, though narrower than those in *M. capillaris*, are more than three times as long. The posterior end of the male is spirally twisted through two complete rotations as contrasted with a twist of 180° in *M. capillaris*. *Protostrongylus austriacus* differs from the other species of the genus in having a hemispherical head, bearing small lips, and long spicules (1 mm.) : it may possibly have to be placed in a new genus.

Neostrongylus, a new genus made to receive Marotel's *Synthetocaulus linearis*, differs from all the other genera of Metastrongylidæ in the following combination of characters : lips in three groups of two, no mouth capsule, one gubernaculum and no telamon, posterior vulva, chitinous plates within the well-developed bursa.

The material for this monograph was derived from 31 chamois (*Rupicapra rupicapra*) mostly from Salzburg, Steiermark and the Tyrol. The whole of the 70 text-figures, two of them in colour, are new drawings. B.G.P.

(b) Schuurmans Stekhoven and Botman discuss the host-parasite relationships of *Proleptus obtusus*, a spirurid nematode parasitic in the intestine of dogfish, particularly as regards the feeding habits of the worm (considered as a structure-function complex) and the tissue-reactions of the host.

P. obtusus, having a squarish head with pronounced lateral alæ and a strongly developed muscular and glandular œsophagus (without a bulb), is well adapted to fastening itself on the intestinal wall of its host, the whole head region serving as a powerful sucker. The œsophageal glands secrete a fluid which effects an external digestion of the host tissues : digestion proceeds further in the œsophagus and is completed, probably, in the intestine which, however, is mainly an organ of absorption. The externally digested connective tissue of the host, together with host secretions from the lesions, constitute the food of the parasite, which is thus a tissue-feeder and not a blood-sucker.

The host tissues influence the parasites, since they first affix themselves in the stomach but speedily move on into the intestine. The parasites influence the host tissues in various ways. The œsophageal secretions may utterly destroy the intestinal epithelium : inflammatory conditions ensue but there is often no trace of cell-infiltration. The secretions of the cervical glands also have a pronounced effect, giving rise to enlarged acidophile nuclei and deposition of chromatin. Giant cells, however, are not found.

Intercellular hæmorrhages occur which are obviously not due to mechanical injury and must be ascribed to toxic action. The authors suggest that this toxin-induced bleeding may also occur in the anæmia found in ankylostomiasis, a view which if true would nullify the old controversy as to whether toxicity or hæmorrhagic effect is the more important factor in this disease. In some cases cell-infiltration does occur, accompanied by connective tissue hypertrophy and the growth of epithelial cells which are atypical as to both nuclei and plasma. In such cases leucocytic infiltration may extend to the muscularis mucosa and even beyond.

B.G.P.

36—Zentralblatt für Bakteriologie, Abteilung 1, Originale.

a. KHALIL, M. & VOGELSANG, E. G.—" One [on] some nematode parasites from South American Animals." CXXIII (7/8), 477-485, 9 figs. [3rd February, 1932.]

b. ZSCHUCKE, J., SZIDAT, L. & WIGAND, R.—" Ein Beitrag zur Kenntnis der Verbreitung menschlicher Helmintheninfektionen am Kurischen Haff." CXXIV (1/2), 1-16, 3 figs., 5 tables, 30 refs. [25th February, 1932.]

c. LÖRINCZ, F., BURGHOFFER, G. & BODROGI, GY.—" Beitrag zur Echinokokkenkrankheit in Ungarn." CXXIV (1/2), 16-22, 3 tables. [25th February, 1932.]

(a) Khalil and Vogelsang have described three new species [not four, as stated], and have re-described a fourth species, of nematodes collected from South American vertebrates.

The new species are *Typhlophorus Hagenbecki* from the stomach of *Trichechus manatus* (Carribean Sea); *Cruzia Travassosia* from the intestine of an armadillo, *Tolypeutes conurus* (Argentine); and *Cruzia mazza* from the intestine of another armadillo, *Tatusia novemcincta* (Argentine). The re-described species is *Epomidiostomum orispinum* (Molin, 1861) from the gizzard of *Cygnus melanocoryphus* (Argentine). B.G.P.

(b) Zschucke, Szidat and Wigand have made a detailed statistical study, based on fæcal examinations of 523 persons, of human parasitic worms in the district around the Kurisches Haff on the coast of East Prussia.

The Kurisches Haff is a large lagoon almost completely shut off from the Baltic by a narrow strip of land, the Kurische Nehrung. The people living on the latter and in three villages around the Haff, mostly poor peasants living under bad hygienic conditions, constituted the subjects of the investigation. The average incidence and intensity of the various infections were as follows :—*Ascaris* 24 per cent. (12 worms per host); *Trichuris* 53 per cent. (6 worms per host); *Dibothriocephalus latus* 34 per cent. (3 to 4 worms per host); *Opisthorchis felineus* 6 per cent. (5 worms per host). *Oxyuris* is also very common but statistics are not available, for technical reasons. The statistics are tabulated according to locality, sex, age-group and (in the case of children) intelligence, and data are also given for mixed infections.

A predilection for dishes involving uncooked fish probably explains the high incidence of tapeworms and liver-flukes: tapeworm was found in one child under two years of age. The authors point out that the systematic treatment of the infected must be accompanied by hygiene propaganda, especially among school children. B.G.P.

(c) Lörincz, Burghoffer and Bodrogi have produced detailed statistics on the incidence of hydatid in man in Hungary.

Starting with the adult *Tænia echinococcus*, they found that of 104 dogs dissected three were infected with the tapeworm (only 11 were free from internal parasites) and it is officially estimated that there are 21,000 dogs in Budapest alone. Next they considered reservoir hosts as represented by beasts killed at the slaughter houses of the Capital. The incidence was as follows: sheep (10,325) 1.8 per cent. (of which over 50 per cent. were of a fertile multilocular type); cattle (1,1710) 7.1 per cent.; pigs (1,769) 17.3 per cent.; horses (1,460) 2.1 per cent. In the matter of human infection the authors point out that, owing to the absence of definite symptoms in many cases, clinical data cannot be relied upon. Instead they have collated the reports of nearly 24,000 post-mortems from four prosectoria over periods of 5 to 10 years, and have in this way found 42 cases of hydatid, or 0.17 per cent. In 13 cases the parasite was considered, directly or indirectly, to be the cause of death and two cases were of the alveolar type. The data are classified according to sex and age-group of host and vitality of parasite. B.G.P.